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THE GENUS *PLESKEOLA* STACKELBERG (DIPTERA: SYRPHIDAE), A JUNIOR SYNONYM OF *PARHELOPHILUS* GIRSCHNER

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Abstract.—The genus *Pleskeola* (**n. syn.**) is synonymized with *Parhelophilus.* The species (*porcus* and *sibiricus,* **n. comb.**) associated with the name *Pleskeola* are redescribed. A checklist and key to species of *Parhelophilus* is presented. Four **new synonyms** and one **new combination** are reported (*Helophilus anniae* Brimley 1923 = *flavifacies* Bigot 1883; *Parhelophilus obscurior* Violovitsh 1960 and *Helophilus citricornis* Shiraki 1968 = *kurentzovi* Violovitsh 1960; *Parhelophilus currani* Fluke 1953 = *laetus* Loew 1863; *Helophilus pilosus* Hunter 1897 is transferred to *Lejops (Lejops)*).

Key Words: key, holarctic, bogs

This is a tale of two rare flower flies, which are known from only a few specimens collected in the boreal forest. One flower fly was the basis of a genus-group name and is currently known only from three specimens collected in Finland and Siberia. The other flower fly is known from more specimens, about 100 in all, and appears to be restricted to bogs in North America. As part of a revision of the higher classification of flower flies, I have sought to re-examine the types of all genus-group names and to place those types into my classification. This eventually brought me to *Pleskeola sibirica* Stackelberg, a genus and species-group name proposed as new by Stackelberg for a unique male collected in central Siberia. On seeing the second known specimen of *Pleskeola,* I immediately recognized it as being close, if not the same as a rare bog fly (*Parhelophilus porcus* (Walker)) that I had once collected in northern New Hampshire. While both *porcus* and *sibiricus* are unusual and share distinctive characters, the two species otherwise agree with the characteristics of *Parhelophilus.* Why *Pleskeola* is here reduced to a junior synonym of *Parhelophilus* is outlined below. What remains of interest is why the species upon which the genus-group name is based is so rare in collections. Is *sibirica* a bog species, like its sister (*porcus*), and merely rare because northern bogs are poorly collected in Russia? Perhaps this treatment of these two species will encourage field people to more closely examine bogs and look for these unusual flies.

The terminology and characters used generally follow those used in the Manual of Nearctic Diptera and all my standards are defined and illustrated in a comprehensive glossary (Thompson 1997). The format of the checklist follows the standards of the Biosystematic Database of World Diptera (see Thompson 1997).

Genus *Parhelophilus* Girschner

Helophilus subg. *Parhelophilus* Girschner 1897: 604. Type species, *Syrphus frutetorum* Fabricius by subsequent designa-

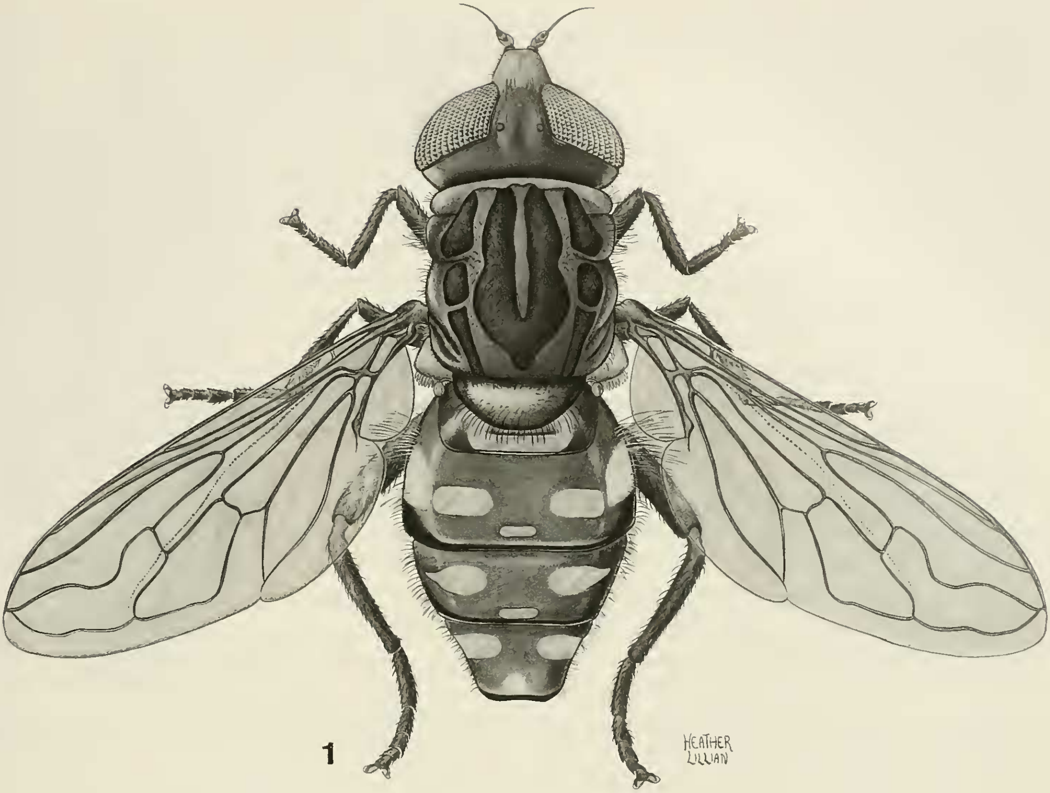


Fig. 1. *Parhelophilus sibiricus*, male, habitus, dorsal view.

tion of Curran and Fluke 1926: 230). Curran and Fluke 1926: 230 (revision, Nearctic spp.); Goffe 1944: 129 (nomenclature), 1945: 276 (type species); Hull 1949: 387 (description).

Pleskeola Stackelberg 1924: 25. Type species, *Pleskeola sibirica* Stackelberg by original designation. Sack 1931: 276 (description); Hull 1949: 402 (diagnosis); Stackelberg 1970: 80, 1988: 121 (reference in key); Goot 1981: 211 (reference in key); Violovitsh 1983: 114, 129 (reference in key). **New synonym.**

Head: Face pale, yellow to white, narrow, slightly longer than broad, occupying about ⅓ of head width, straight to concave beneath antennae, without distinct medial tubercle, pollinose and pilose laterally, pollinose and bare medially; frontal prominence low, at dorsal ⅓ of head; vertex black, pollinose, pilose, rectangular, slightly longer than wide; ocellar triangle variable, from broader than long to longer than broad; eye bare or pilose; always dichoptic in males; antenna short, less than ½ as long as face; basoflagellomere oval; arista bare, slightly longer than antenna.

Thorax: Broader than long, long pilose, usually with longitudinal pale pollinose vittae on mesonotum (absent or greatly reduced in *obsoletus*); meso-katepisternum continuously pilose from ventral to dorsal margins; metathoracic spiracle small, slightly smaller than basoflagellomere; meso-anepimeron bare posteriorly; katepimeron bare; meron bare; metasternum usually pilose (bare in *divisus*); plumula elongate, unbranched; subscutellar fringe absent. Legs: Hind femur slightly swollen; hind tibia slightly arcuate, with basoventral carina on basal ½ or less, without apical calcar. Wing: Microtrichose; cell R1 open;

cell R4+5 with short petiole, with petiole about as long as crossvein h; stigmatic crossvein present.

Abdomen: Suboval, with paired lateral light colored pollinose maculae on dorsum.

Girschner (1897), on the basis of a study of the calypter of higher Diptera, divided the genus *Helophilus* into subgenera. He defined most of these subgenera with characters, but *Parhelophilus* was defined by exclusion (that is, those species which did not fit the other defined subgenera). At first, most workers ignored Girschner's action as they could not understand the characters on which the group was based and, hence, treated *Parhelophilus* as a synonym of *Helophilus.* As Verrall (1901: 524–525) noted, *Parhelophilus,* as construed by Girschner, was a heterogeneous group (two species belonged to *Parhelophilus* of current authors, one to *Lejops* Rondani). Curran and Fluke (1926) designated a type species, recognized *Parhelophilus* as a distinct group, and treated the group as a genus. North American workers have followed Curran and Fluke as have some Palaearctic workers. The characters that separate *Parhelophilus* from *Helophilus* are: 1) presence of stigmatic crossvein; 2) entirely pollinose face, without a shiny medial vitta; and 3) short, suboval and compact abdomen. *Parhelophilus* differs from *Lejops* in the 4) lack of an apical calcar on the hind tibia as well as the suboval abdomen. *Pleskeola* shares all these characteristics with *Parhelophilus.*

Stackelberg (1924) erected his genus *Pleskeola* on the basis of the pilose eyes, an unusual character state among species related to *Helophilus* (he also noted the slightly sinuate vein R4+5 and in contrast to *Mallota,* the dichoptic males). Stackelberg's original description was brief and in Latin. Because the species on which the genus was based was rare, most subsequent workers merely repeated the original description and/or left *Pleskeola* as unplaced or a genus of dubious status.

Eye pilosity is a character of variable importance among flower flies. In most genera, the eyes of all included species are either bare or pilose. Within some genera, however, the character is variable, with some species being bare eyed and others pilose (e.g., *Syrphus*). In some species, the male eyes are pilose and the females' are bare (e.g., *Cheilosia latifrons* (Zetterstedt)). The eye pilosity of *sibirica* is irrelevant as a genus-group character as other characters reveal a sister-group relationship to one species of *Parhelophilus* and common relationships with all species of *Parhelophilus. Parhelophilus porcus* and *sibiricus* have the 1st and 2nd sterna (figs. 11–12) fused and a distinct dark pollinose body pattern (figs. 1–2), both characters found no where else among the helophiline flower flies. These two species share a characteristic basoventral process on the hind femur (figs. 14–15) in males with *fruterorum* and *divisus.* As noted above, *sibirica* shares all the characters of the genus *Parhelophilus.* Hence, *Pleskeola* is here considered a synonym of *Parhelophilus* (new synonym).

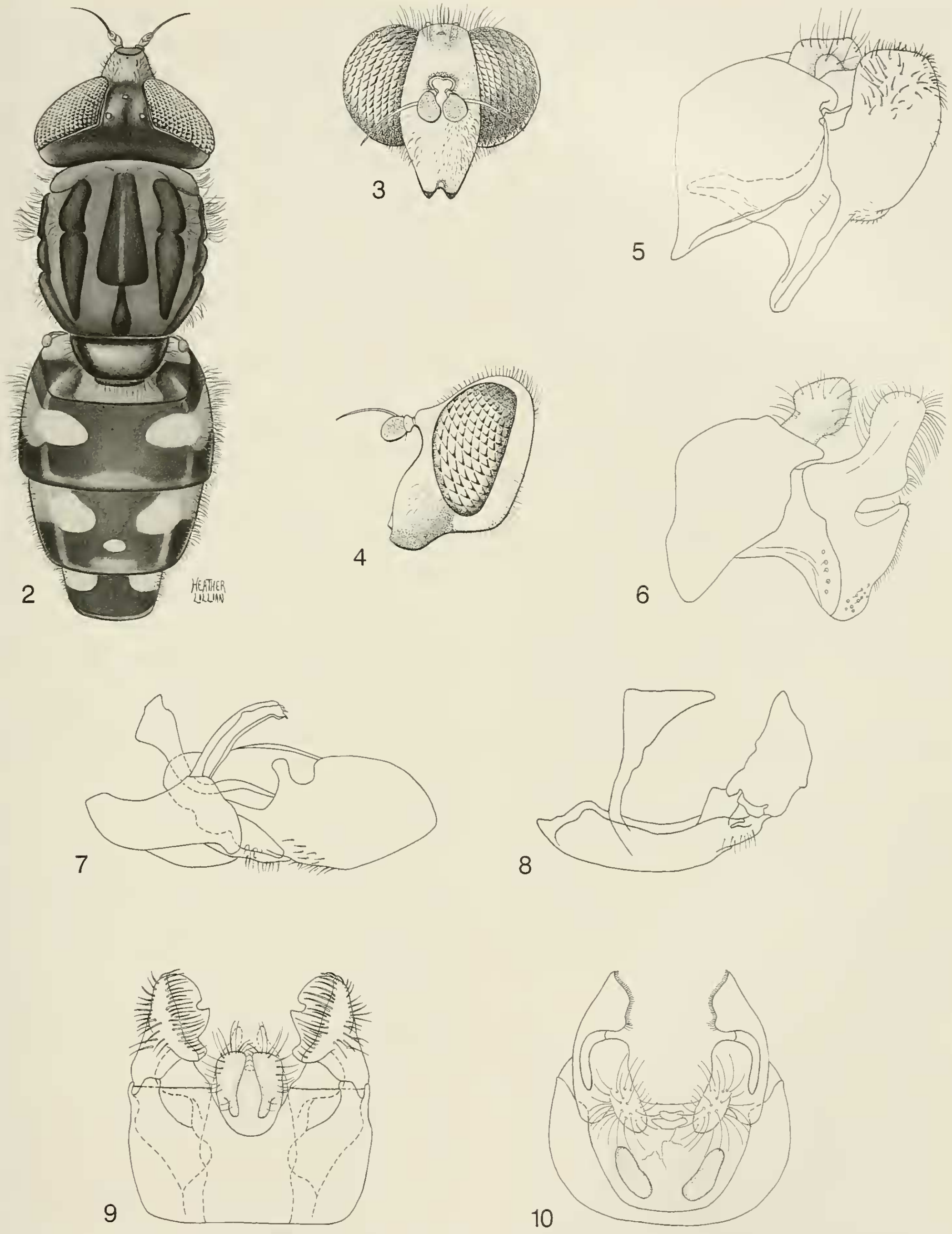
Parhelophilus porcus (Walker)
(Figs. 2, 6, 7, 10, 11, 13, 15)

Eumerus porcus Walker 1849: 554 ♀ [error for ♂] Ontario, Hudson's Bay, Albany River, St. Martin's Falls (LT ♂ BMNH here designated). Osten Sacken 1858: 48 (catalog citation), 1875: 61 (catalog citation, ?=*Eristalis*).

Helophilus porcus: Osten Sacken 1878: 134, 250 (catalog citation, note on types); Williston 1887: 197 (description); Aldrich 1905: 394 (catalog citation); Osburn 1907: 3 (British Columbia), 1908: 10 (British Columbia); Graenicher 1910: 41 (Wisconsin); Fluke 1922: 245 (Wisconsin); Johnson 1923: 10 (Maine), 1925: 174 (New England); Wirth et al. 1965: 619 (catalog citation).

Tubifera porcus: Kertész 1910: 259 (catalog citation).

Parhelophilus porcus: Curran and Fluke 1926: 232 (description, distribution, figures (head, abdomen)); Petch and Malthais 1932: 51 (Quebec); Strickland



Figs. 2–10. Features. 2, *Parhelophilus porcus*, habitus, dorsal view. 3, *P. sibiricus*, male, head, frontal view. 4, *P. sibirica*, male, head, lateral view. 5, *P. sibiricus*, male genitalia, 9th tergum and associated parts, lateral view. 6, *P. porcus*, male genitalia, 9th tergum and associated parts, lateral view. 7, *P. porcus*, male genitalia, 9th sternum and associated parts, lateral view. 8, *P. sibiricus*, male genitalia, 9th sternum and associated parts, lateral view. 9, *P. sibiricus*, male genitalia, 9th tergum and associated parts, dorsal view. 10, *P. porcus*, male genitalia, 9th tergum and associated parts, dorsal view.

1938: 203 (Alberta); Cole & Schlinger 1969: 326 (descriptive note, distribution western North America); Miliczky and Osgood 1979: 21 (Maine, flower (*Vaccinum* spp.)).

Head: Face yellowish white, white pollinose and pilose; gena black, shiny and bare anteriorly, white pilose and grayish-white pollinose posteriorly; front black, gray pollinose, black pilose; frontal lunule yellow; vertex black, black pollinose and pilose except for some yellow pile on ocellar triangle; occiput black, grayish-white pollinose, black pilose dorsally except some yellow pile posterior to ocellar triangle, white pilose ventrally. Eye bare. Antenna orange, black pilose.

Thorax: Black, mainly yellow pilose, sparsely gray pollinose, with black pollinose vittate pattern on mesonotum (see Fig. 2); postpronotum yellow pilose; mesonotum with intermixed black pile; anepisternum black pilose dorsoposteriorly; halter yellow; calypter and plumula white; scutellum black, dull black pollinose except broadly shiny marginally, black pilose except yellow pilose marginally. Wing microtrichose. Legs mainly black and black pilose; femoral-tibial joints of fore and mid legs broadly orange; fore and mid tarsi yellow, pale pilose; white pilose on coxae, posteriorly on mid femur, anterobasally on hind femur. Hind femur of male with basoventral process (Fig. 15).

Abdomen: Black, mainly black pilose; tergum 1 bluish-gray pollinose except black pollinose macula apicolaterally, short black pilose except white pilose laterally; tergum 2 with mediolateral small orange macula, shiny apically, elsewhere black pollinose except for medial white pollinose macula, yellow pilose on pale areas and basolaterally; terga 3 & 4 black pollinose except shiny apically and with medial grayish white pollinose macula, yellow pilose basolaterally; tergum 5 gray pollinose, white pilose; genitalia white pilose, sparsely pollinose; sterna black, subshiny, very sparsely pollinose, shiny medially, white pilose; 2nd & 3rd sterna of male with apicomedial patches of long curved bristles (Fig. 11). Male genitalia (Figs. 6, 7 & 10): surstyle with broad posteromedial cleft and without a dorsomedial notch on dorsal lobe; superior lobe short, only ⅔ as long as hypandrium.

Type.—*Eumerus porcus* Walker, lectotype ♂ BMNH, London, labeled "Hudson's Bay [reverse] 47 14," "Hudson's Bay, pres. by, G. Barnston, 44. 17," and with the appropriate Austen labels. I accept this male as a syntype as Walker usually sexed flower flies by the condition of the eyes. Hence, the dichoptic male of *porcus* would appear to Walker as a female. Osten Sacken (1878) reported two "well-preserved specimens" in the British Museum, unfortunately only one was found and it is now headless.

Flight period.—May–July.

Distribution.—British Columbia to New Brunswick, south to Wisconsin and Maryland. The southernmost record (Maryland) is from the 1965 Diptera catalog (Wirth et al., 1965: 619). I have not found its source. The Pennsylvania records from "North Mountain" are from Ricketts near Lake Ganoga (Johnson 1914).

Biology.—Nothing is known of the immature stages of *porcus,* but by phylogenetic inference these will be aquatic as all eristaliine flower fly larval are of the rat-tailed maggot type. The adults are collected in association with bogs, where they have been frequently collected on flowers (*Fragaria, Houstonia, Ledum groenlandicum, Potentilla,* and *Rubus*). Most of the known sites for *porcus* are the typical kettlehole bogs (Bingham Pond, Wilson Mills), but some (Laurel Lake site) are better described as fens bordered by spruce, fir and hemlock (see Johnson 1985 for details on the bogs of northeastern USA). Unfortunately, for most collected specimens, no site information is available.

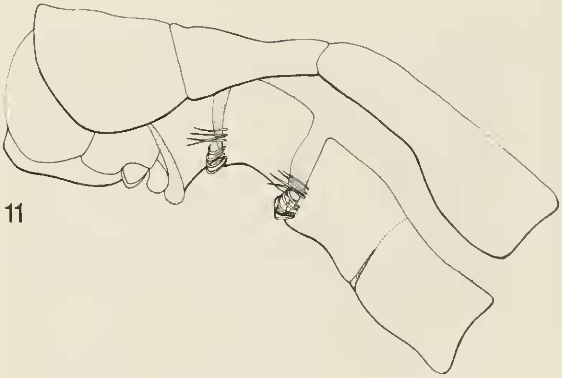
Material Examined.—ALBERTA: Banff, 4 July 1922, C. B. D. Garrett (1 ♀ Curran & Fluke 1926: 232). MANITOBA: Cedar

Lake, July 1993, Brues (1 ♂ USNM); Gimli, 13 June 1923, A. J. Hunter (1 ♂ - Curran & Fluke 1926: 232). ONTARIO: Ottawa (1 ♂ USNM); Lake Abitibi, Low Bush, 3 July 1925, N. K. Bigelow (1 ♂ MCZ); McDiarmid (Curran & Fluke 1926: 232). QUEBEC: Montreal, June 15 1906 (1 ♀ Curran & Fluke 1926: 232). CONNECTICUT. Litchfield Co., Salibury, 5 km NW of town center, bog at edge of Bingham Pond, 1,894 ft, 14–16 June 1983 (5 ♂ CTM), 20 June 1984 (1 ♂ CTM), 23 May 1985 (2 ♂ 1 ♀ CTM), 4 June 1986 (1 ♂ 1 ♀ CTM), all specimens collected in Malaise trap among ericaceous shrubs at the edge of a pond surrounded by bog mat with spruces. MAINE. Oxford Co., Lincoln Plantation, Maine highway 16, 6 miles south of Wilsons Mills, "Wilson Mills Bog," [a sphagnum bog dominated by black spuce and larch]: 4 June 1976 (1 ♂ FEE), F. D. Fee; 19 June 1982 on *Ledum groenlandicum* (2 ♂ FEE) F. Fee, F. D. Fee (2 ♂ FEE); 24 June 1982 on *Ledum groenlandicum* (1 ♂ 1 ♀ FEE), F. D. Fee, F. Fee (1 ♂ FEE); 6 June 1986 on *Ledum groenlandicum,* F. D. Fee (1 ♂ FEE); 29 May 1987 on or about *Fragaria,* F. D. Fee (1 ♂ 1 ♀ FEE); 3 June 1989 on *Fragaria,* F. D. Fee (1 ♂ FEE); 19 June 1982, C. T. Maier (1 ♂ CTM). Penobscot Co., Passadumkeag, 26 May 1977, E. Miliczky (1♂ USNM). NEW YORK: Essex Co., Lake Champlain, Corlaer Bay, June 1939 (1 ♂ 1 ♀ USNM). NEW HAMPSHIRE. Coos Co.: Errol, 8 km SW junction of New Hampshire highways 16 and 26, 19 June 1982, C. T. Maier (1 teneral ♀ CTM); Pittsburg, Rt. 3, Connecticut Lakes, 22–24 June 1972 B. J. & F. C. Thompson (1 ♂ USNM); Pittsburg, Back Lake, 17 June 1982 on *Fragaria* (2 ♀ FEE), 22 June 1982 (1 ♂ 1 ♀ FEE), 18 June 1983 (1 ♂ 1 ♀ FEE), 3 June 1986 on *Fragaria* (2 ♂ 1 ♀ FEE), all collected by F. D. Fee; Clarksville, Hurlbert Swamp, 15 June 1984 F. D. Fee (1 ♂ FEE); 2nd Connecticut Lake, Route 3 west of Dam, 3–5 June 1988 on *Fragaria* (1 ♂ FEE) and on *Ledum groenlandicum* (1 ♂ 1 ♀ FEE), all collected by F. D. Fee; Connecticut Lakes, Scott Bog, 8 June 1990 on *Fragaria* (1 ♂ FEE), 14 June 1990 on Taraxacum (1 ♂ FEE), both collected by F. D. Fee. Sullivan Co.: Cornish Flat, 12 July 1971 A. G. Lavallee (1 ♂ 1 ♀ USNM). VERMONT, Windham Co., Laurel Lake, near Jacksonville, 30 May 1977, on *Houstonia,* H. D. Pratt (1 ♂ 1 ♀ USNM). PENNSYLVANIA. Centre Co.: Black Moshannon State Park, 15 May 1977 (1 ♀ FEE), 11 June 1977 (1 ♀ FEE), 16 June 1978 (1 ♂ 2 ♀ FEE), 22 May 1979 on *Taraxacum* (1 ♀ FEE), 13 June 1979 on *Rubus* (3 ♂ 1 ♀ FEE), all collected by F. D. Fee; Bear Meadows Natural Area, 17 June 1987 on *Ranunculus* (1 ♂ FEE), 26 June 1989 (1 ♀ FEE), all collected by F. D. Fee. Tioga Co.: Morris, 6 km Northwest of, State Game Lands #268, 15 June 1979 in boggy sedge meadow with some open water (2 ♂ FEE), 20 June 1979 (2 ♂ FEE), 4 June 1980 on *Rubus* and *Potentilla* (3 ♂ 3 ♀ FEE), 13 June 1980 on *Rubus* (2 ♂ 2 ♀ FEE), 23 June 1980 on *Rubus* (1 ♂ FEE), 1 June 1981 on *Rubus* & *Fragaria* (3 ♀ FEE), 7 June 1981 on *Rubus* & *Potentilla* (4 ♂ 1 ♀ FEE), all collected by F. D. Fee. Luzerne Co., North Mountain [=Ricketts, near Lake Ganoga], June 6 ?? (1 ♂ USNM), June 4 ?? (1 ♀ MCZ), June 8 1898 (2 ♂ 2 ♀ USNM, 1 ♂ 1 ♀ MCZ) all collected by C. W. Johnson.

Parhelophilus sibiricus (Stackelberg), New combination
(Figs. 1, 3–5, 8, 9, 12, 14)

Pleskeola sibirica Stackelberg 1924: 25. Type-locality: Russia, "Sibiria centralis, Obj-Enisseijskij kanal. septen. et orientem versus Enisseisk." HT ♂ ZISP. Sack 1931: 276 (description); Stackelberg 1970: 80, 1988: 121 (description, figures (abdomen, wing); Goot 1981: 211 (reference in key, figures (abdomen, wing); Violovitsh 1983: 129, 1986: 123 (Siberia); Peck 1988: 193 (cat. cit.)

Head (Figs. 3, 4): Face yellowish white, white pollinose and pilose; gena black,



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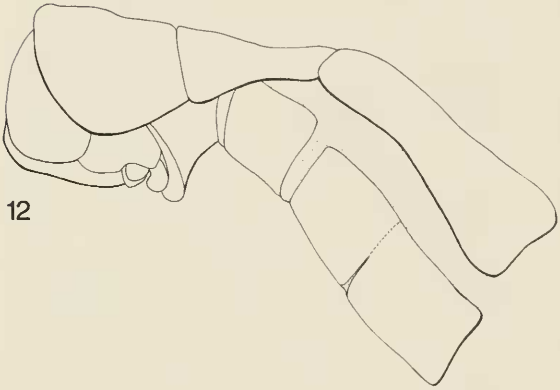

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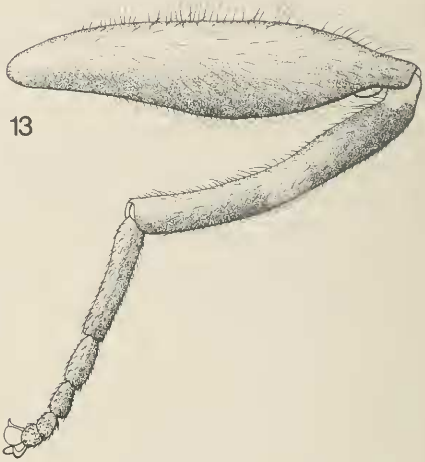

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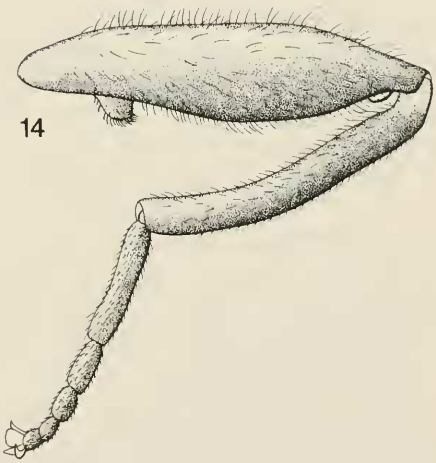

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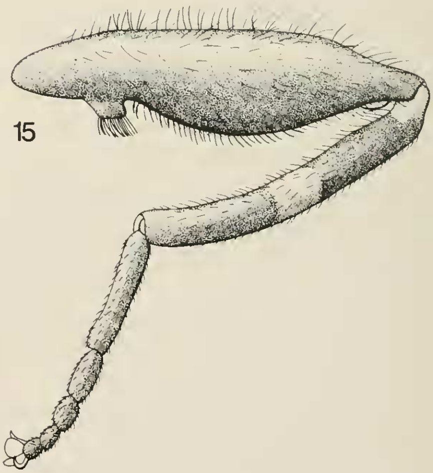

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Figs. 11–15. Features, ventrolateral views. 11–12. Abdomen, male. 11, *Parhelophilus porcus*. 12, *P. sibiricus*. 13–15, Hind leg, lateral view. 13, *P. porcus*, female. 14, *P. sibiricus*, male. 15, *P. porcus*, male.

shiny and bare anteriorly, yellow pilose and gray pollinose posteriorly; front yellowish white, white pollinose and pilose; frontal lunule yellow; vertex black, black pollinose and pilose except for some yellow pile on ocellar triangle; occiput black, gray pollinose, black pilose dorsally except some yellow pile posterior to ocellar triangle, yellow pilose ventrally. Eye brown pilose. Antenna brown, black pilose.

Thorax: Black, mainly black pilose, sparsely gray pollinose, with darker pollinose vittate pattern on mesonotum (see Fig. 1); postpronotum yellow pilose; mesonotum with intermixed yellow pile; katepisternum yellow pilose; halter yellow; calypter and plumula white; scutellum black, dull brown pollinose except shiny marginally, black pilose. Wing microtrichose. Legs black, mainly black pilose; yellow pilose on coxae, posteriorly on mid femur, anterobasally on hind femur. Hind femur of male with basoventral process (Fig. 14).

Abdomen: Black, mainly black pilose; tergum 1 black pollinose, short black pilose except white pilose laterally; tergum 2 with mediolateral small orange macula, shiny apically, else where black pollinose except for medial white pollinose macula, yellow pilose on pale areas and basolaterally; terga 3 and 4 black pollinose except shiny apically and with medial grayish white pollinose macula, yellow pilose basolaterally; genitalia black pilose, dull pollinose; sterna black, subshiny, very sparsely pollinose, white pilose; sterna of male simple (Fig. 12). Male genitalia (Figs. 5, 7, and 9): surstylus without posteromedial cleft, with small medial notch on mesial side of dorsal lobe; superior lobe elongate, longer than hypandrium.

Distribution.—Russia (Karelia & Siberia).

Material examined.—RUSSIA. Karelia: "Paanajarvi [=Ozero Olanga, 66°8′N 30°0′E], 833, R. Frey" (UZMH, 1 ♂). Siberia: "23 May 1908, Tshugunov, Obj Enissejskij Canal, NE of Enisseisk" [= Ob' - Yenisey rivers Canal, northeast of Yeniseysk](ZISP, Holotype ♂).

Stackelberg (1970: 80) listed Finland on the basis of the Frey specimen. Hackman (1980) did not list the species from Finland because the Frey specimen, which was collected in Finland, was collected at a locality which is now in Russia! This specimen was unknown to Sack (1931) and Violovitsh (1983, 1986), who stated that it was known only from the unique original male. Peck (1988) gave Yakutia as additional locality. Unfortunately, I have been unable to find the specimen on which this record is based.

KEY TO THE SPECIES OF *PARHELOPHILUS*

1. Female 15
– Male 2
2. Hind femur without a tubercle (Fig. 13) . . . 7
– Hind femur with a ventral subbasal tubercle covered with black setulae (Figs. 14–15). . . 3
3. Abdomen with yellow maculae on at least 2nd tergum; thorax entirely yellow pilose; abdominal sterna without modified hairs 5
– Abdomen with gray pollinose maculae on all terga (Figs. 1–2); mesoanepisternum and postalar callus black pilose. Hind femur entirely black 4
4. Eye pilose; abdominal sterna without tufts of specialized pile (Fig. 12); front yellow pilose . . . . *sibiricus*
– Eye bare; 2nd and 3rd abdominal sterna with apical submedial tufts of modified pile (Fig. 11); front black pilose . . . . *porcus*
5. Hind femur black on basal ⅔ or more; hind femoral process elongate, with long setae . . . . *fruterorum*
– Hind femur yellow on basal ⅓ or more; hind femoral process short, with short setae 6
6. Vertex broad, about as long as broad, black pilose; hind trochanter with black setulae; front tarsus with apical 2 tarsomeres dark; metasternum bare . . . . *divisus*
– Vertex narrow, almost twice as long as broad, yellow pilose on upper ⅓ or more; hind trochanter yellow pilose, without black setulae; front tarsus entirely orange; metasternum pilose . . . . *flavifacies*
7. 6th and most of 7th abdominal segments shiny; vertex completely yellow pilose . . . 14
– Genitalia segments grayish yellow pollinose; vertex partially black pilose 8
8. 2nd and 3rd terga without yellow maculae (see couplet 11 for other characters) . . . *brooksi*

– 2nd and 3rd terga with large yellow lateral maculae 9

9. Vertex narrow, at least twice as long as wide posteriorly; ocellar triangle narrow; medial ocellar distance much greater than distance between lateral ocelli . . . . *flavifacies*

– Vertex broader, about as long as wide posteriorly; ocellar triangle broader, medial ocellar distance equal to or less than distance between lateral ocelli 10

10. Front tibia extensively dark apically; hind femur black basally 13

– Front and middle tibiae yellow; hind basotarsomere without black setae 11

11. Hind femur black on basal ¾, rarely very narrowly yellow on base, with long pile basoposteriorly . . . . *versicolor*

– Hind femur broadly yellow basally, yellow on at least basal ¼ or more, without any long pile 12

12. Front yellow pilose; cercus elongate posteriorly . . . . *laetus*

– Front black pilose; cercus oval . . . . . *kurentzovi*

13. Mid tibia extensively dark apically; hind tibia black on basal and apical ⅓, yellow medially; hind basotarsomere with a few black bristles apicolaterally, without long lateral pile; front partially or entirely yellow pilose . . . . *rex*

– Mid tibia entirely yellow; hind tibia yellow on basal ⅔, black apically; hind basotarsomere without black bristles, with long pile laterally; front black pilose . . . . *consimilis*

14. Mesonotum without distinct pollinose vittae; hind femur narrow and arcuate; genitalia large, with 6th segment as long as 4th tergum; hind basotarsomere shorter pilose, with pile only about as long as tarsal width . . . . *obsoletus*

– Mesonotum with distinct pollinose vittae; hind femur broader and not arcuate; genitalia smaller, with 6th segment only about ½ as long as 4th tergum; hind basotarsomere longer pilose, with pile distinctly longer than tarsal width . . . . *integer*

15. Hind femur entirely black; abdomen black, with gray pollinose maculae on all terga; mesonotum and mesoanepisternum extensively black pilose; fore and mid femora extensively black pilose; hind basotarsomere with black apicolateral bristles along anterior edge; ocellar triangle broad, with medial ocellar distance much less than distance between lateral ocelli . . . . *porcus*

– Femora much more extensively yellow; abdomen partially yellow, at least with lateral margins partially yellow; mesonotum and mesoanepisternum yellow pilose 16

16. Abdomen with lateral margins broadly yellow and without or with very small medial yellow maculae; femora extensively yellow, with only a narrow dorsal black vitta on medial ⅔; ocellar triangle equilateral, with lateral ocellus broadly separated from eye margin, separated by about twice its diameter, with medial ocellar distance subequal to distance between lateral ocelli; hind tarsus without black bristles . . . . *brooksi*

– Abdomen with large yellow maculae at least on 2nd and 3rd terga 17

17. Hind femur yellow on basal ⅓ or more; ocellar triangle larger, with lateral ocellus narrowly separated from eye margin, separated by about its diameter 21

– Hind femur black or dark brown on basal ⅔ or more, although base maybe narrowly yellow 18

18. Fore tibia black apically, intense at least dorsally 20

– Fore tibia entirely yellow, rarely slightly darkened antero-ventrally 19

19. Occiput dorsally with row of long black pile; face profile straight; costa with golden pile restricted basally, not extending to humeral crossvein . . . . *frutetorum*

– Occiput entirely yellow pilose; face profile convex; costa with extensive golden pile basally, extending beyond humeral crossvein . . . . *versicolor*

20. Mid tibia entirely yellow; hind tibia yellow on basal ⅔ or more; fore basotarsomere without black spinules; mesonotum without medial vitta . . . . *consimilis*

– Mid tibia black on apical ¼ or more; hind tibia black basally and apically, narrowly yellow medially; fore basotarsomere with black spinules posteroventrally; mesonotum with a narrow medial pollinose vitta . . . . *rex*

21. Front narrow, about ⅙ of head width at ocellar triangle; ocellar triangle approximately equilateral, with medial ocellar distance about equal to or greater than distance between lateral ocelli; hind basotarsomere with a row of short black bristles along anterior edge; hind femur frequently black on apical ⅔ . . *flavifacies*

– Front broad, about ¼ or more of head width at ocellar triangle; ocellar triangle broader, with medial ocellar distance much less than distance between lateral ocelli 22

22. Hind basotarsomere with a double row of short black bristles along anterior edge . . . . *divisus*

– Hind basotarsomere usually without any black bristles, at most with 2–3 black bristles 23

23. Hind basotarsomere with long erect pile, at

least laterally, with pile about as long as or longer than tarsal width .... *integer*

– Hind basotarsomere with shorter appressed pile 24

24. Mesonotum with pollinose vittae either absent or obscure .... *obsoletus*

– Mesonotum with pollinose vittae distinct . . 25

25. Hind femur entirely yellow anteriorly; fore and mid tibiae entirely yellow ..... *kurentzovi*

– Hind femur black medially; fore and mid tibiae usually dark basally .... *laetus*

Checklist of *Parhelophilus* Species

brooksi Curran. Alberta to Wisconsin.

Parhelophilus brooksi Curran 1927: 90 ♂ Manitoba, Petchipegosis (HT ♂ CNC).

Lunomyia pollinaria Fluke 1939: 373 ♂♀ Wisconsin, Spooner (HT ♂ AMNH). Syn. Fluke 1953: 208.

consimilis Malm. Norway to western Siberia, south to France & Italy.

Helophilus consimilis Malm 1863: 80 Sweden, Stadsvassen. T ?

divisus (Loew). Michigan to Ontario, south to Indiana & Florida.

Helophilus divisus Loew 1863: 316 (1864: 200 #4:78) District of Columbia (ST ♂ MCZ).

flavifacies (Bigot). Quebec, south to Mississippi & Florida.

Helophilus flavifacies Bigot 1883: 344 ♂ Maryland, Baltimore (HT ♂ BMNH).

Helophilus anniae Brimley 1923: 278 ♂ North Carolina, Raleigh (HT ♂ USNM). **N. syn.**

frutetorum Fabricius. Scandinavia to Siberia, south to Spain, Italy, Bulgaria & Kyrghyzstan.

Syrphus frutetorum Fabricius 1775: 765 ? England (T ? Unknown, not stated in Fabricius)

Syrphus femoralis Fallén 1817: 31 ? Sweden, "in paroecia Farhult" (T ZIL)

Helophilus frutetorum var. *xanthopygus* Loew 1846: 149 Italy, Sicily, Syracuse (T ? ZMHU)

integer (Loew). Ontario & Quebec, south to North Carolina.

Helophilus integer Loew 1863: 314 ♂ New York (ST ♂ MCZ).

kurentzovi Violovitsh. Siberia, Korea, Japan.

Parhelophilus kurentzovi Violovitsh 1960: 207 ♂♀ Russia, Sakhalin, Yuzhno-Sakhalinsk (HT ♀ ZISP).

Parhelophilus obscurior Violovitsh 1960: 209 ♂♀ Russia, Sakhalin, Yuzhno-Sakhalinsk (HT ♂ ZISP). **N. syn.**

Helophilus citricornis Shiraki 1968: 214 ♂♀ Japan, Oze. (HT ♂ NIAS). **N. syn.**

laetus (Loew). British Columbia to Quebec, south to New Mexico, Louisiana & North Carolina.

Helophilus laetus Loew 1863: 315 ♂♀ New York & Wisconsin (ST ♂ MCZ).

Helophilus aureopilis Townsend 1895: 51 ♂ Michigan, Constantine (HT ♂ UKaL). Syn. Hunter 1897: 139.

Parhelophilus currani Fluke 1953: 128 ♂♀ Louisiana, 15 miles east of Creole (HT ♂ UKaL). **N. syn.**

obsoletus (Loew). Alaska to Ontario and Maine, south to British Columbia & Wisconsin.

Helophilus obsoletus Loew 1863: 314 ♂ Hudsons Bay Territory (ST ♂ MCZ).

porcus (Walker). British Columbia to New Brunswick, south to Wisconsin & Maryland.

Eumerus porcus Walker 1849: 554 ♂ Ontario, Hudson's Bay, Albany River, St. Martin's Falls (LT ♂ BMNH here designated).

rex Curran & Fluke. British Columbia to Ontario, south to Colorado & West Virginia.

Parhelophilus rex Curran & Fluke 1926: 234 ♂♀ Ontario, Macdiarmid & Algonquin Park; New York, Lake George, Northwest Bay (ST ♂ CNC).

sibiricus Stackelberg. Russia (Karelia to Eastern Siberia).

Pleskeola sibirica Stackelberg 1924: 25 ♂ Russia, "Sibiria centralis, Obj-Enisseijskij kanal. septen. et orientem versus Enisseisk" (HT ♂ ZISP). **N. comb.**

versicolor Fabricius. Scandinavia to Siberia, south to Spain, Italy, Bulgaria & Kirghiz.

Syrphus versicolor Fabricius 1794: 283 Germany (T ? Unknown, stated as "Dom. Smidt" in Fabricius)

Parhelophilus almasyi Szilady 1940: 65 Kazakhstan, Taldy-Kurgan, Panfilov (T ? MNM (destroyed?))

NOTES ON THE KEY AND SPECIES OF *PARHELOPHILUS*

Parhelophilus flavifacies is keyed in 2 couplets because the femoral tubercle can be low and difficult to distinguish in some specimens. The types of *flavifacies* and *anniae* were examined and found to represent the same species.

Parhelophilus obscurior Violovitsh and *Helophilus citricornis* Shiraki are synonyms of *kurentzovi*. I have studied the holotype of *citricornis* and Barkalov (in litt.) has studied the types of the Violovitsh species.

Parhelophilus currani Fluke is only a pale southern race of *laetus*, the few specimens of which I have seen differ from more northern ones in that the abdominal maculae are expanded and united to form fasciae.

Parhelophilus brooksi (Curran) is probably best considered a species of *Lejops (Lunomyia)* as placed by Fluke on the assumption that the lack of the apical calcar on the hind tibia is a secondary loss. The species is, however, included in the key as this is the genus in which users will probably still identify *brooksi*.

Helophilus pilosus Hunter is a species of *Lejops (Lejops)*, **new combination.**

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LITERATURE CITED

Aldrich, J. M. 1905. A catalogue of North American Diptera. Smithsonian Miscellaneous Collection 46(2), 680 pp.

Bigot, J. M. F. 1883. Diptères nouveaux ou peu connus. 22^e partie, XXXII: Syrphidi (2^e partie). Èspeces nouvelles, no. I. Annales des la Societé Entomologique de France (6) 3: 61–88; 221–258; 315–356.

Brimley, C. S. 1923. Additional Syrphidae (Diptera) from North Carolina, with descriptions of two supposed new species. Entomological News 34: 277–279.

Cole, F. R. and Schlinger, E. I. 1969. The flies of Western North America. xii + 693 pp. Berkeley and Los Angeles.

Curran, C. H. 1927. Descriptions of nearctic Diptera. Canadian Entomologist 59: 79–92.

Curran, C. H. and C. L. Fluke. 1926. Revision of the Nearctic species of *Helophilus* and allied genera. Transaction of the Wisconsin Academy of Sciences, Arts and Letters 22: 207–281.

Fabricius, J. C. 1775. Systema entomologiae, sistens insectorvm classes, ordines, genera, species, adiectis synonymis, locis, descriptionibvs, observationibvs. [32] + 832 pp. Kortii, Flensburgi et Lipsiae [=Flensburg and Leipzig]. [1775.04.17]

Fabricius, J. C. 1794. Entomologia systematica emendata et aucta. Secundum classes, ordines, genera, species adjectis synonimis, locis, observationibus, descriptionibus. Vol. 4, [6] + 472 + [5] pp. C. G. Proft, Hafniae [=Copenhagen].

Fallén, C. F. 1817. Syrphici Sveciae [Part]. Pp. 31–42. Lundae (=Lund). [1817.05.20]

Fluke, C. L. 1922. Syrphidae of Wisconsin. Transaction of the Wisconsin Academy of Sciences, Arts and Letters 20: 215–253, pls. 5–6.

Fluke, C. L. 1939. New Syrphidae (Diptera) from Central and North America. Annals of the Entomological Society of America 32: 365–375, 1 pl.

Fluke, C. L. 1953. Some syrphid fly synonomy. Entomological News 64: 208–209.

Girschner, E. 1897. über die Postalar-Membran (Schüppchen, Squamulae) der Dipteren. Illustrierte Wochenschrift für Entomologie 2: 534–539, 553–559, 567–571, 586–589, 603–607, 641–645, 666–670, 6 pls.

Goffe, E. R. 1944. Some changes in generic nomenclature in Syrphidae (Diptera). Entomological Monthly Magazine 80: 128–132. [1944.07.04]

Goffe, E. R. 1945. Note on the type-species of some genera of Syrphidae (Diptera). Journal of the Society for British Entomology 2: 276–279. [1945.11.30]

Goot, V. S. van der 1981. De zweefvliegen van Noordwest-Europa en Europees Rusland, in het bijzonder van de Beneluz. Bibliotheck van der Koninklijke Nederlandse Natuurhistorische Vereniging 32, 275 pp.

Graenicher, S. 1910. A preliminary list of the flies of Wisconsin belonging to the families Bombyliidae, Syrphidae and Conopidae. Bulletin of the Wisconsin Natural History Society 8: 32–44. [1910.05.??]

Hackman, W. 1980. A check list of the Finnish Diptera. II. Cyclorrhapha. Notulae Entomologicae 60: 117–162.

Hull, F. M. 1949. The morphology and inter-relationship of the genera of syrphid flies, recent and fossil. Transaction of the Zoological Society of London 26: 257–408, 25 figs. [1949.05.??]

Hunter, W. D. 1897. Contribution to the knowledge of North American Syrphidae.–II. Canadian Entomologist 29: 121–144, pl. 5.

Johnson, C. W. 1914. Notes on inadequate locality labels (Dipt.). Entomological News 25: 123–126.

Johnson, C. W. 1923. Collecting Diptera in Maine. Maine Naturalist 3: 7–10. [1923.08.15]

Johnson, C. W. 1925. Fauna of New England. 15. List of the Diptera or two-winged flies. Occassional Papers of the Boston Society of Natural History 7(15), 326 pp., 1 fig.

Johnson, C. W. 1985. Bogs of the Northeast. xvi + 269 pp. University Press of New England, Hanover & London

Kertész, K. 1910. Catalogus dipterorum hucusque descriptorum. Vol. 7, 470 pp. Lipsiae, Budapestini (=Leipzig, Budapest).

Loew, H. 1846. *Helophilus*. Stettiner Entomologische Zeitung 7: 116–127, 141–150, 164–169.

Loew, H. 1863. Diptera Americae septentrionalis indigena. Centuria tertia. Berliner Entomologische Zeitschrift 7: 1–55.

Malm, A. W. 1863. Anteckningar öfver Syrphici i Skandinavien och Finland, med särskildt afseende pä de arter och former, hvilka blifvit funna i Göteborgs och Bohus län. Göteborgs K. Veternsk.-o. VitterhSamh. Handl. 8: 1–81.

Miliczky, E. R. and E. A. Osgood. 1979. The effects of spraying with Sevin-4-oil on insect pollinators and pollination in a spruce-fir forest. Technical Bulletin, Life Sciences Agricultural Experimental Station of University of Maine 90, 21 pp.

Osburn, R. C. 1907. The Syrphidae of British Columbia. Bulletin of the British Columbia Entomological Society 8: 1–4.

Osburn, R. C. 1908. British Columbia Syrphidae, new species and additions to the list. Canadian Entomologist 40: 1–14, 1 fig.

Osten Sacken, C. R. von 1858. Catalogue of the described Diptera of North America. Smithsonian Miscellaneous Collections 3(1), vii-xx, 92 pp.

Osten Sacken, C. R. von 1875. A list of the North American Syrphidae. Bulletin of the Buffalo Society of Natural Science 3: 38–71. [1875.11.??]

Osten Sacken, C. R. von 1878. Catalogue of the described Diptera of North America. Smithsonian Miscellaneous Collection, 270, xlvii + 276 pp. [1878.10.??]

Peck, L. V. 1988. Family Syrphidae. pp. 11–230. *In* Soos, A., ed., Catalogue of Palaearctic Diptera. Vol. 8, Syrphidae—Conopidae. 363 pp. Akademiai Kiado, Budapest

Petch, C. E. and J. B. Malthais. 1932. A preliminary list of the insects of the Province of Quebec. Part II, Diptera, by A. F. Winn and G. Beaulieu. Revised and supplemented. Annual Report, Quebec Society for the Protection of Plants 23/24 (supplement 24), 100 pp.

Sack, P 1931. 31. Syrphidae [part]. Pp. 241–288. *In* Lindner, E., ed., Die Fliegen der paläarktischen Region. 4(6). Stuttgart [1931.04.29]

Shiraki, T. 1968. Syrphidae (Insecta: Diptera). Vol. 3, [viii]+272 pp., 47 pls. In Fauna Japonica. Biogeographical Society of Japan, Tokyo. [1968.03.30]

Stackelberg, A. A. 1924. Syrphidarium novorum palaearcticorum diagnoses. Wiener Entomologische Zeitung 41: 25–29.

Stackelberg, A. A. 1970. [49. Fam. Syrphidae—Hover flies.] Pp. 11–96. In Bei-Bienko, G. Ya (ed.), [Keys to the insects of the european part of U. S. S. R.] 5(2) Leningrad [In Russian]

Stackelberg, A. A. 1988. 49. Fam. Syrphidae. Pp. 10–148. In Bei-Bienko, G. Ya (ed.), Keys to the insects of the european part of U. S. S. R. 5(2) Smithsonian Institution Libraries & National Science Foundation, Washington

Strickland, E. H. 1938. An annotated list of the Diptera (flies) of Alberta. Canadian Journal of Research (D, Zoological Sciences) 16: 175–219.

Szilady, Z. 1940. über paläarktische Syrphiden. IV. Annales historico-naturales Musei nationalis Hungarici (Zoology) 33: 54–70.

Thompson, F. C. 1997. The Biosystematic Database of World Diptera. Diptera Data Dissemination Disk 1. Also at URL: http://www2.sel.barc.usda.gov/Diptera/biosys.htm

Thompson, F. C. 1997. A key to the genera of the flower flies of the Neotropical Region with the description of two new genera and eight new species. Contribution of the American Entomological Institute, 56 pp. [In Press]

Townsend, C. H. T. 1895. Contributions to the dipterology of North America --I. Syrphidae. Transaction of the American Entomological Society 22: 33–55.

Verrall, G. H. 1901. Platypezidae, Pipunculidae, and Syrphidae of Great Britain. Vol. 8, (vi) + 691 pp., 457 figs. **In** *his* British Flies. London, Cambridge.

Violovitsh, N. A. 1960. New palaearctic Syrphidae (Diptera) from the Far Eastern Territory of the USSR. Entomologicheskoe Obozrenie 36: 748–755. [In Russian]

Violovitsh, N. A. 1983. Sirfidy Sibiri (Diptera, Syrphidae). 241 pp. Nauka, Novisibirsk. [In Russian, see below for translation]

Violovitsh, N. A. 1986. Siberian Syrphidae (Diptera) (Sirfidy Sibiri) Novosibirsk, 1983. Verslagen en Technische Gegevens, Instituut voor Taxonomische Zoologie (Zoologisch Museum), Universiteit van Amsterdam. 288 pp. [Translation of the foreword and keys of Violovitsh 1983]

Walker, F. 1849. List of the specimens of dipterous insects in the collection of the British Museum. Vol. 3, Pp. 485–687. London [1849.06.30]

Williston, S. W. 1887. Synopsis of the North American Syrphidae. Bulletin of the United States National Museum 31, xxx + 335, 12 pls. (1886). [Before 1887.06.30]

Wirth, W. W., Y. S. Sedman and H. V. Weems, Jr. 1965. Family Syrphidae. pp. 557–625. *In* Stone, A., C. W. Sabrosky, W. W. Wirth, R. H. Foote, and J. R. Coulson, eds., A catalog of the Diptera of America north of Mexico. U. S. Department of Agriculture, Handbook 276, 1696 pp.